INCENTIVE FEES AND MUTUAL FUNDS

Edwin J. Elton*

Martin J. Gruber*

Christopher R. Blake**

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* Nomora Professors of Finance, New York University

** Associate Professor of Finance, Fordham University

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An incentive fee is a reward structure that makes management compensation a function of investment performance relative to some benchmark. Incentive fees are often used to compensate the manager of investment assets. For example, hedge funds typically charge investors a fixed fee plus an incentive fee equal to between 5% and 25% of the fund's annual return. Limited liability partnerships, such as commodity partnerships, real estate partnerships, and oil and gas partnerships, often charge incentive fees in excess of 20% of profits. There are a number of reasons why incentive fees are considered desirable. Perhaps the most often cited is that incentive fees align manager interest with investor interests. Both groups do better when the investment does better. Thus, the argument goes, management effort should be higher for funds with incentive fees. Closely associated with this is the argument that the best managers will gravitate towards investment pools that have incentive fees since they can make more money by managing such pools. The argument continues that since investors realize that funds with incentive fees draw the best managers and elicit the most effort, the investors are willing to place more money in these funds.[1]

While financial economists can and have theorized about the impact of incentive fees, there has been very little empirical analysis of the impact of such fees. The major reason is that incentive fees exist almost exclusively in industries such as hedge funds that not only don't have audited data, but are not even required to systematically report data to a central agency. The data that exists are self-reported and subject to self-selection and survivorship bias.[2]

There is one industry that employs incentive fees that has audited publicly available data: the mutual fund industry. The funds that employ incentive fees in this industry make data available on the structure of the fees, the size of the fees each year, investment performance and the size of the assets under management. A second advantage of studying incentives for mutual funds is that these funds exist alongside mutual funds that don't charge incentive fees. This lets us compare the performance of funds with and without incentive fees and thus gain insight into the impact of incentive fees.

While these attributes constitute a major advantage of using mutual funds to study the impact of incentive fees, there is an additional attribute of fees for mutual funds that must be considered. Mutual funds by law must use a form of an incentive fee known as a "fulcrum fee." The specifications of the fulcrum fee were laid out in a 1970 amendment to the Investment Company Act of 1940. According to the amendment, the incentive fee must be centered around an index, with increases in fees for performance above that index matched by decreases in fees for performance below the index.[3] In addition, in practice the incentive component of fees always has an upper limit and a lower limit on size. These attributes are in contrast to the form of incentive fees employed by hedge funds and most private partnerships where the incentive component of fees is never negative, has a high watermark, usually use zero rather than an index as a reference benchmark, and is usually unbounded.[4] In a later section we will show these differences are not as large as might be supposed, since fulcrum fees with limits as set by mutual funds can always be converted to an equivalent never-negative incentive fee.

The purpose of this article is to examine the impact of incentive fees on mutual fund performance. The paper proceeds as follows. In the first section we examine the characteristics and the use of incentive fees in the mutual fund industry. In the second section we explore the theory of the effect of incentive fees on manager behavior. In the third section we discuss our data. In the fourth section we examine empirical results concerning fees earned, risk-adjusted performance, the effect of incentive fees on risk, and new cash flows into funds using incentive fees.

I. The use of incentive fees by mutual funds.

Incentive fees are not widely used by the mutual fund industry. In 1999, only 108 out of a total 6,716 bond and stock mutual funds used incentive fees.[5] While incentive-fee funds represented only 1.7% of the total number of bond and stock funds, they held 10.5% of their assets. Furthermore, from 1990 to 1999, assets under management held by incentive-fee funds grew faster than assets for mutual funds in general. The size and growth of the assets under

management by funds using incentive fees makes a study of their impact on fund performance interesting in itself, as well as for the additional evidence it can provide on the impact of incentive contracts on managerial behavior.

It is important to note that fund families with incentive fees have two basic organizational structures: they hire an outside manager or manage internally. In 1999, 27.4% of the funds with incentive fees employed outside managers. The remainder were managed internally. Some of the time this was done by employing a wholly-owned subsidiary, and some of the time the fund manager was a direct employee or partner in the fund family. Later we will show how this difference affects behavior.

In 1999, the 108 funds that used incentive fees employed 43 different benchmarks, with the S&P 500 being the most popular (47 funds). Incentive fees are calculated on cumulative performance over periods ranging from three months to five years, with 12 months (45 funds) and three years (59 funds) being the most popular time spans.

All mutual funds that use incentive fees have a fixed component of fees, as well as a variable component that must be symmetrical around a benchmark. In addition, every mutual fund caps the maximum negative amount of the variable portion of the fee, which limits the maximum as well as the minimum size of the fee since the variable portion of the fee must be symmetrical. For all existing funds, incentive fees have been set so that the total fees (fixed plus variable component) can never be negative. The incentive component of fees is either expressed as a continuous function of the difference between return performance and benchmark performance (78 funds) or the linear relationship is approximated by a discrete step function (30 funds). In addition, incentive fees sometimes do not kick in unless performance has exceeded (or fallen short) of the benchmarks by a fixed amount.

If we ignore the upper limit, a fulcrum fee can always be expressed as a never-negative incentive fee by subtracting the maximum differential return which earns a fee from the benchmark and subtracting the negative variable fee at the limit from the fixed fee. Consider a

fund with a one percent fixed fee. Now assume a variable fee of .10 to be applied to the difference between the fund performance and the benchmark performance up to a maximum difference of 4%. This can be expressed as a never-negative incentive fee by stating the fee as a 60 basis point fixed fee plus a variable fee of 0.10 times the amount the fund outperforms a bogey set at 4% below the benchmark. Thus, the only difference between fulcrum and never-negative fees is the existence of the upper limit on fees (in this example, 1.40%). This means that fee rates are always convex over the lower range of performance and are concave for funds that are performing really well.

The rate of compensation for outperforming an index is much smaller for mutual funds than that found for other types of assets, e.g., hedge funds or commodity funds, but given the size of the assets under management it is large enough to be of real economic importance. For example, the five largest positive incentive fees for five different funds in our sample ranged from 11 to 58 million dollars, while the five largest negative fees ranged from 17 to 120 million dollars. The five largest incentive fees expressed as a percentage of the fixed fee were, on the up side, 50% to 73% of the fixed fee, while on the down side they were 64% to 99% of the fixed fee. We should note one additional aspect of our analysis. Our definition of incentive fee funds does not include those funds where investors pay a fixed fee but the portfolio manager has an incentive contract. Thus, when we compare performance of funds where investors pay incentive fees to those without, some of the "without" comparison sample will have managers on incentive contracts. This should reduce the probability of our finding significant differences between the two samples.[6]

II. Implications of financial theory for management behavior.

In this section we examine some of the implications for management behavior that arise from investment theory and the literature on incentive contracting.

The theory of incentive contracting hypothesizes that incentive fees should elicit more effort on the part of portfolio managers. A second hypothesis is that firms with incentive

contracts should attract better managers, or at least not attract the poorest managers. If this is true, and if portfolio managers have differences in ability, then we would expect funds that have incentive contracts to have better real performance than funds that do not have incentive contracts. In addition, either because the investing public believes these hypotheses are true or because investors observe better performance for incentive fee funds, funds with incentive contracts should attract more new cash flow than funds without incentive contracts.

Even if funds with incentive contracts do not attract managers with superior security selection skills, there are a number of ways managers can earn positive incentive fees with no selection ability. These techniques are not the type of behavior that is in the best interest of investors. The first two ways involve taking advantage of the lack of a risk adjustment in the incentive fee.

One way to achieve a higher expected return than the benchmark with no security selection skills is to invest in non-benchmark assets that theory suggests or the managers believe will have a positive expected return. Assume a manager believes in either an APT model or that, as derived in Brennan (1993), stocks in a benchmark will have lower expected returns than non-benchmark securities. Assume further the benchmark is the S&P 500 index. How could the manager take advantage of this?

In either case the manager can expect to obtain expected return greater than the benchmark by taking exposure to indexes that he/she believes are rewarded with positive expected return. If it is a common stock fund benchmarked to the S&P 500 index, we would expect to find loadings on non-benchmark indexes such as a small-stock index, because they are believed to give a positive excess return and exposure to small stocks is not penalized in the reward structure. A similar strategy exists for bond funds. Switching into lower grade bonds would give a higher expected return, and the added risk in the form of sensitivity to common equity (see Elton, Gruber, Agrawal and Mann (2001)) is not penalized by the compensation structures.

A second way to outperform a benchmark on average with no selection skill is to have a beta greater than one with respect to the benchmark (or for bonds a duration greater than the benchmark). A beta greater than one will earn positive incentive fees with random security selection unless returns on the reference index are negative. Since the expected return on all the reference indexes are positive, a fund should have a beta greater than one.

A beta greater than one has a second advantage. Because of the symmetry of fulcrum fees, a beta greater than one pre-fees results in a lower post-fee beta and higher alpha post-fees. Let

R_i be the return on a fund before the variable fee is imposed

F be the variable fee

R_B be the return on the benchmark

Then the beta with the benchmark (post-fees) in the presence of a fulcrum performance fee is

$$\beta_i = \frac{\text{cov}\left(R_i - F\left(R_i - R_B\right), R_B\right)}{\text{var}\left(R_B\right)} = \frac{\text{cov}\left(R_i R_B\right)}{\text{var}\left(R_B\right)}\left(1-F\right)+F$$

where $\frac{\text{cov}\left(R_i R_B\right)}{\text{var}\left(R_B\right)}$ is the beta with the benchmark in the absence of a performance fee and would be the beta post-fees for a fixed management fee.

For funds with a beta greater than one before fees, fulcrum fees will reduce the beta, increase alpha above what it would be if the same average level of fee was paid as a fixed fee, and make the fund appear better in evaluation services.[7]

When we consider the shape of the incentive schedule, we gain additional insight into the way mutual funds with incentive fees might adjust risk to earn fees without selection ability. As discussed in a prior section, a fulcrum fee with limits can always be expressed as an equivalent

never-negative incentive fee. Since fees are a percent of assets, all one-period mutual fund incentive fees are monotonically increasing and convex up to the upper limit both because the fee itself rises and because the fee is applied to the starting asset base times the return. Furthermore, manager compensation depends not only on the structure of one-period fees, but also on how dollar fees and assets grow over time. As documented by Gruber (1996), Sirri and Tufano (1998), Chevalier and Ellison (1997) and Del Guercio and Tkac (2000), new fund inflows are highly correlated with a fund outperforming an index. Furthermore, funds underperforming an index experience outflows much smaller than the inflow of money to funds outperforming an index. This asymmetry in fund flows imposes a further convexity on the dollars of manager compensation. What do we know about manager behavior with a convex reward structure?

First, most authors argue that, with never-negative incentive contracts, managers should engage in strategies that cause returns to have a high variance around the benchmark (see Das and Sundaram (2000), Carpenter (2000) and Cuoco and Kaniel (1998)). They argue that this strategy is optimal because underperforming the benchmark has less of an impact on dollar fees than does overperformance.[8] Thus we should expect to see higher tracking errors for incentive-fee funds than that for the typical mutual fund.

While this should hold for the average manager, management behavior can vary depending on where on the incentive schedule their past performance places them. Managers who, because of poor past performance, are near the flat parts of the compensation schedule have a much more convex structure and an incentive to take high risk (see Carpenter (2000), Grinblatt and Titman (1989)). In addition, Das and Sundaram (1998), Cuoco and Kaniel (1998) and Carpenter (2000) argue that the manager should overinvest in the index and have a lower tracking error when the manager is sufficiently high on the rising part of the compensation schedule (to lock in gains) and that this tendency should be stronger the larger the incentive fee.

There is one more aspect of the impact of incentive fees which should be examined. As discussed earlier, mutual fund complexes employ both inside and outside managers. Inside managers are often principals or long-term employees of the firm. They are less likely to be replaced after poor performance than are outside managers.[9] We would expect that this would allow them to take more risk than outside managers in order to earn higher fees. In addition, since inside managers are often principals in the firms designing the incentive system, they should be able to design an incentive contract that is easier to beat.

For example, 18 of 28 external managers in our sample don't earn positive fees unless fund returns exceed the benchmark by a specified amount, but for our sample funds that use internal managers, only 22 of 80 have this added hurdle. In addition, internal managers have incentive fees that increase faster as the portfolio manager outperforms the benchmark by larger amounts. Finally, 20 of 80 funds with internal managers use a benchmark based on the performance of an average of actual mutual funds while all of the external managers use a security index as a benchmark. Since mutual fund returns are measured after expenses, and since actively managed funds on average have underperformed indexes, using an index of mutual fund returns as a benchmark makes the benchmark easier to beat.

One justification for using incentive fees, especially for internal managers, is that it is a good marketing strategy. Investors could believe that funds using incentive fees attract better managers or are signaling they have better managers. In either case we would expect funds with incentive fees to attract more new inflows.

In this section we have enumerated some of the characteristics of behavior we might find associated with mutual funds employing incentive fees relative to mutual funds not employing incentive fees. These are:

1. Better stock selection ability (because of better managers).
2. Sensitivity to other indexes (in addition) to the declared benchmark index.
3. A beta with the benchmark index greater than one.

4. A higher tracking error.

5. Greater risk-taking after a period of underperforming the benchmark.

6. Less risk-taking after periods of outperforming the index.

7. Greater increase in new cash flow.

8. Inside managers should

    a. Earn larger incentive fees than outside managers.

    b. Take greater risk relative to outside managers.

III. Data

Lipper provided us with data on which funds had incentive contracts, descriptions of the terms of the contracts, and actual fees paid by each fund in each year. These data were extensively cross-checked using individual fund prospectus, supplements to the prospectus, and phone conversations with individual funds. Our final sample ranged from a low of 40 funds in 1990 to a high of 108 in 1999.

Return data came from Morningstar, as did many of the indexes. Additional indexes were obtained from Prudential-Bache, Datastream, and the producers of the indexes themselves. We identified and collected data on 41 different reference indexes used by the funds in our sample. For the four Sexton funds we were unable to obtain the benchmark indexes. We contacted Sexton, but they did not keep a record of the past values of their customized indexes or the exact way they were calculated, and thus we could not analyze these funds. This is an extreme example of a general problem. Consider the simplest index, the S&P 500 index. In almost none of the prospecti was it indicated whether dividends were included or not. Nor is the investor ever told whose S&P 500 index is being used. As discussed in Elton, Gruber and Blake (2000) or *Pension and Investment Age* (1986), there are differences in the S&P 500 price index depending on who calculates it, and adding dividends compounds the problem. Throughout we use the index with

dividends, if it is available. If an index is only available as a price index, then we use the price index as the reference index.

We also created a matched non-incentive-fee fund sample in order to draw comparisons with incentive fee funds. For each year we randomly selected for each fund with incentive fees four funds in the same ICDI category from the CRSP mutual fund data set that had three years of return data.[10] In all tables this is the sample we compare to our incentive fee sample.

IV. Empirical Results

In this section we will examine whether funds earn positive incentive fees,

diagnose the return performance of funds with incentive fees, measure and diagnose the risk characteristics of funds with incentive fees, and examine new cash inflows to incentive-fee funds. When examining performance and risk, we will contrast the characteristics of funds with incentive fees with a sample of funds that do not employ incentive fees.

A. Incentive Fees

Positive incentive fees should be important to a fund not only because beating a benchmark earns higher fees, but because of the inferences drawn by investors on the performance of the fund. Table I contains a summary of the actual incentive fees earned by all funds that have incentive fees and those earned by important subgroups of these funds. First note that, when we examine all funds in all years, on average they have earned a *negative* incentive fee of 0.006% of net assets per year. The number of fund years where negative incentive fees are earned is about the same as the number of fund years where positive incentive fees are earned. In Table I and in all subsequent tables we include in the category "all funds" common stock funds, international funds, bond funds and balance funds. We do not separately report data on bond and balanced funds, since there are so few of them. There is a difference in fees earned among our two major subcategories. Common stock funds earn slightly negative incentive fees

that are significantly different from zero at the 10% level. More common stock funds have negative rather than positive incentive fees. In contrast, international funds have earned positive incentive fees on average, and the difference is statistically significant at the 1% level. Only international funds have been successful in either constructing benchmarks or managing money to benefit from such fees.

It is interesting to explore whether there are some funds that can consistently earn positive or negative incentive fees. To examine this we employ a 2 by 2 contingency table. In any year that we use as a base for predicting future incentive fees, we start by ranking all funds that charge an incentive fee calculated on a one-year basis. We then divide the funds into top and bottom halves according to the ratio of incentive fees earned divided by total assets. We find that funds that have high incentive fees in one period are almost twice as likely to have high incentive fees in the next period as they are to have low incentive fees. Funds that have low incentive fees in one period are 1½ times more likely to have low incentive fees in the next period. Using a standard analysis of variance test, these numbers are statistically different from zero at the one percent level.

Are there other ways of dividing the population of mutual funds that might give us insight into how incentive fees affect performance? Earlier we discussed the fact that incentive fees are paid to both internal managers and external managers. Firms that employ internal managers, many of whom are principals in the firm, select their own benchmarks and design their own fee structures. External managers are hired by a firm to manage a fund. As discussed earlier, external managers have much less control over the selection of the benchmark and the design of the fee structure. The empirical results (see Table I) support the value of control in that internal managers earn larger incentive fees than do external managers.[11] However, the differences are small and only statistically insignificant at the 5% level for international funds.

Another way to categorize funds offering performance fees is by size of the fees. All the arguments concerning why funds with performance fees should outperform those without

performance fees work equally well when comparing funds with high fee schedules versus those with low fee schedules. When we grouped funds into high- and low-fee funds at several different performance levels on the fee schedules, we found no difference in the relationship between being a high- or low-fee fund and the size of incentive fees as a percent of total assets actually earned.[12] The lack of a relationship between fee schedule and fees earned is consistent with funds that have incentive fees not earning positive incentive fees.

While the results reported in this study apply to incentive fee funds that existed in any year in our sample period we might learn some more about their behavior by examining funds that start incentive fees or stop using incentive fees during the ten years. At the start of our period, 40 incentive fee funds existed. Over the period, 86 new incentive fee funds started and 18 stopped using incentive fees. Of the 18 funds that stopped using incentive fees, all earned negative (poor performance) incentive fees prior to the time they dropped the fees. Incentive fees called attention to this poor performance. Of the 18 funds, performance was sufficiently poor that 6 were merged and 3 liquidated at or soon after they dropped incentive fees. Of the nine funds that continued to exist after dropping incentive fees none changed managers but their average expense ratios increased by 16 basis points. For those funds, clearly dropping incentive fees was a way to raise expense ratios and not have to report negative incentive fees.

B. Return Performance

A fund can earn incentive fees relative to a benchmark by following a strategy of holding asset classes different from the benchmark and/or achieving good stock selection. For example, many funds that have the S&P 500 index as their benchmark hold portfolios of small stocks. For these funds, whether the fund earns incentive fees or not is likely to be determined primarily by the performance of small stocks relative to large stocks rather than by managerial skill.[13] We start by examining security selection ability.

1. Security Selection Ability

The issue we will address in this section is whether the funds that have incentive fees demonstrate superior security selection ability. To do this we remove the effect on performance of security types not in the fund's benchmark which the fund might hold. For each fund we measured excess risk-adjusted return (alpha) from a multi-index model where one of the indexes was the fund's stated benchmark index. For common stock funds we included, in addition to the benchmark index, the following indexes unless they were redundant given the benchmark index: the S&P 500 index, an index of the return on small stocks minus the return on large stocks, the return on growth stocks minus the return on value stocks, a bond index, and an international index. The first four indexes were included because they have been shown to capture the variance/covariance structure of fund returns.[14] Two indexes need special discussion: the bond index and the international index. Many funds with common stock as their objective hold bonds. If a bond index is left out, returns on bonds above the risk-free rate are impounded in alpha. In addition, many of the domestic common stock funds held some international stocks.

For bond funds we used the benchmark index plus the following indexes unless they were redundant: a government corporate bond index, a mortgage-backed bond index, and a high-yield bond index.[15] Finally, the indexes for international funds are the benchmark index plus the following indexes, unless they are redundant: the S&P 500 index and the MSCI indexes for Europe, Japan, Pacific and Emerging Markets. If the benchmark for a fund was MSCI EAFE, Europe or World, creating a redundancy, Europe was dropped.

All returns were measured in excess of the risk-free rate (as measured by the 30-day T-bill rate) unless the index itself was the difference in return between two portfolios. In all cases excess risk-adjusted return (alpha) was determined by estimating the betas from a regression of fund returns on multi-index returns over three years including as the last year the year in which the fund was being evaluated. From these regressions, betas (the sensitivity of the fund to each index) were estimated. These betas were then used in the year of evaluation to compute the

funds' multi-index alpha for that year. Table II shows the multi-index alpha for the funds with incentive fees.

The multi-index alpha across all funds was a positive 0.048% per month. Overall, funds with incentive fees show positive stock selection ability that is significantly different from zero at the 5% level. The difference in alpha between funds that have incentive fees and funds that do not is 0.084% per month, which is economically significant and is statistically significant at the 1% level.[16] For common stock funds and international funds, the results are similar. The signs are the same, and most of the results are economically and statistically significant.

While we initially attribute this better stock selection to more effort or better managers, we have to be careful and take one more step in the analysis. We know that one of the key factors affecting performance is the size of expense ratios. Performance is measured after expenses. Perhaps funds that employ incentive fees have better alphas because they charge lower expenses. To examine this we compared the expense ratios for all funds in both our incentive-fee sample and our non-incentive-fee sample. As shown in Table III, across the entire sample, funds with incentive fees have expenses that are lower by 0.036% a month than funds without incentive fees. Furthermore, the differences are significantly different at the 1% level.

In Table III we also present the difference of the incentive-fee alpha from zero, corrected for differential expenses, and the difference of the corrected alpha from the alpha for non-incentive-fee funds. In both cases, incentive-fee funds do better. However, after adjusting for differential expenses, the difference of incentive-fee fund returns from a portfolio of indexes with the same risk, while positive, is not statistically significantly different from zero. If funds with incentive fees charged the same higher expenses that were charged by other actively managed funds, they would do only slightly better than a portfolio of indexes with the same risk.[17]

When we compare incentive-fee funds with actively managed non-incentive-fee funds, even when we adjust the return on incentive fee funds for differential expenses, the results are

much stronger. Incentive-fee funds show better stock selection ability, and the results are statistically significant at the 5% level. In conclusion, for the overall sample just over half of the ability of incentive-fee funds to outperform non-incentive-fee funds is due to superior security selection, while the rest is due to charging lower expenses.

In Tables II and III we also analyze the difference in performance between incentive-fee funds that use internal and external managers. The results are quite clear. From Table I we see that funds with internal managers earn larger fees than funds with external managers. This is consistent with our hypothesis of internal managers setting their own reimbursement rather than negotiating with an outside agent. In Tables II and III, whether we do or do not correct for differential expenses, internal managers show better stock selection performance than external managers, though the differences are only statistically significant at the 5% level when differential expenses are corrected. One possible explanation is differences in the ability to attract managers. Potentially, external managers have the incentive-fee structure imposed on them, and internally managed funds use the fee structure to attract managers. Even with higher expenses the investor is better off investing in incentive-fee funds with internal managers than in those that use external managers. All of the tables involving comparisons between incentive fee funds and non-incentive fee funds were repeated where a non-incentive fee sample was selected matched in size as well as the policy of the fund. For this comparison, we paired each incentive fee fund with another fund with the same objective but closest in size. This resulted in a much smaller sample of non-incentive fee funds (531). All of the results shown in the tables remained essentially the same except for differential expenses and differential adjusted alpha in Table III. When corrected for size, the differential expenses are much lower, for example, changing from –0.035% to –0.015% for the entire sample from –0.037% to –0.018% for the common stock sample. The differential adjusted alpha also changed less from .048% to .033% for the entire sample. However, the conclusions reached above are unchanged. We do not discuss the

comparisons with the size-matched sample in other tables because the magnitude of the numbers as well as the conclusions, are virtually the same.

Let us step back for a moment and reconsider return performance. We started out considering the incentive fees earned by funds that used them, and found that the incentive component of fees for all intents and purposes was zero. In Table IV we show that, consistent with this finding, the differential return (fund return minus benchmark return) is also close to zero. Yet funds with incentive fees had both lower expenses and greater stock selection ability than other funds. Where did the alpha go? There are two components of return that could explain this difference: beta levels or bets taken on other indexes.

In Table IV we show that, at least for the overall sample, the changes in return due to bets on factors other than the firm's benchmark (e.g., size, value) are approximately zero.[18] The big difference, the big giveback of return, by management of funds with incentive fees is from having betas with their benchmark less than one. For example, 4.6 of the 4.8 basis points of excess risk-adjusted return is given up by having an average beta of .952.

It is surprising that management runs these funds with a beta less than one with respect to the benchmark when benchmark indexes are expected to, and indeed did, have a positive excess return over the period of our study. As discussed in the next section, managers have significant exposure to non-benchmark indexes. The low beta might, in part, be due to the presence of these non-benchmark assets in the portfolio. In addition, note that the betas on these funds are higher than the average betas for funds with no incentive fees (See Table V). However, since betas can be easily managed with the use of futures, it is surprising to find the betas less than one.

When we examine common stock funds and international funds separately, we see some differences. For international funds, the sector bets, in this case country or region bets, do seem to have a positive contribution to return.

When we examine internal versus external managers, we find a consistent story. Internal managers have better returns because they have better selection ability, they have higher (close

to one) betas, and they make better bets on other factors. While we will discuss this in greater detail in the next section, the results are consistent with two influences: 1) internal managers have designed their benchmarks to make them look better, and 2) internal managers are willing to take on more risk because they have more job security.

C. Risk

Incentive-fee funds can expose investors to added risk, either because they have higher risk than non-incentive-fee funds on average or because they change risk as a response to prior performance, and this results in high risk over short periods. Each of these issues will be discussed in turn.

1. Risk Over Time

Funds with incentive fees have a declared benchmark. Investors in these funds should logically expect that the funds follow strategies that are consistent with the benchmark. For example, if a fund's benchmark is a mid-cap index, investors should expect that the fund invests in mid-cap stocks.[19] Earlier we discussed the hypothesis that incentive fees might cause managers to follow investment strategies that had higher risk and that were inconsistent with their declared benchmark. This behavior is a source of risk to the investor. Whether funds actually follow these hypothesized strategies will now be examined.

The first hypothesis was that incentive fee funds should track a benchmark less closely than non-incentive-fee funds because of their more convex reward structure. We have two measures of this. First, Table V shows the average R^2 on the benchmark regressions for incentive-fee funds and the difference between the average incentive-fee R^2 and the average R^2 for the matched sample of non-incentive-fee funds, using style analysis to determine which index they most closely follow.[20] As shown in Table V**,** incentive-fee funds have a statistically lower R^2 than the matched sample. Furthermore, many of the R^2s for incentive-fee funds are

surprisingly low. The average value is 0.80. For 25% of the funds the R^2s are below 0.7 and for six percent of the funds the R^2 are below 0.5. Nine R^2s are actually below 0.25.

Our second measure, a direct measure of tracking error, is the fund variance around the benchmark return. If we use the variance of deviations from the benchmark as a measure of tracking error, we see that incentive fee funds have a statistically higher unexplained variance relative to the benchmark. These results are consistent with incentive-fee funds increasing deviations from the benchmark in order to take advantage of a convex reward structure.

The overall differences in R^2 and tracking error variance are primarily caused by the common stock fund category. For this category of funds, the average R^2 is statistically lower and the average variance of deviations from the benchmark is statistically higher for the funds with incentive fees versus the sample of non-incentive-fee funds. The difference in R^2 and tracking error variance is extremely small and not statistically significant when we compare the incentive fee sample and non-incentive-fee sample for international funds.

Earlier we discussed why we would expect different tracking error for inside and outside managers. All incentive-fee-fund managers should have larger tracking error to take advantage of a convex incentive structure. However, this carries a greater risk of termination to an outside manager. Thus we would expect an outside manager to have lower tracking error variance than an inside manager. From Table V we see that outside managers have lower tracking error variance than inside managers overall and for each type of fund, and that most differences are statistically significant.

The second strategy an incentive-fee fund might follow to outperform its benchmark is to have a high beta. This would mean a higher systematic risk to an investor. As shown in Table V, incentive-fee funds have a much higher beta than non-incentive-fee funds. The differences are statistically significant at the 1% level for every sample. Nevertheless, they are still surprisingly low given the advantage a beta greater than one would have on fees. As shown in Table V, the average beta with the benchmarks is less than one. It is 0.96 for common stock funds and 0.87

for international funds. Overall, 46% of the funds have betas greater than one. Only 48 out of 531 fund years have betas greater than 1.2, while 118 have betas less than 0.80.

One of the strategies a fund can follow is to attempt to outperform a benchmark by taking exposure to additional systematic factors that are priced. For example, if one believed in a multifactor APT model, one of the factors was small stocks, the benchmark was the S&P 500 index and the small-stock factor had a positive risk premium, the fund could take exposure to small stocks. This is clearly a strategy followed by a large number of common stock funds with performance fees. For 228 out of 411 fund years we can reject at the 0.01 level the hypothesis that their investment policy is captured by their benchmark index. The most frequent strategy for common stock funds is to be much more heavily exposed to small stocks than to their benchmark indexes. In 192 out of 411 fund years, common stock funds have a statistically significant exposure to small stocks at the 5% level even when their benchmark is included in the regression in addition to the small stock index.

The next most common strategy for stock funds is to have a much higher exposure to value or growth stocks than to their benchmark indexes. At the 5% significance level, 35% of the fund years show a growth exposure, and 16% a value exposure. At the 5% level of significance, 15% of the domestic stock funds have exposure to international indexes. Finally, at the same 5% level, about 8% of the domestic funds have significant exposure to bonds.

In roughly 70% of the fund years, international funds have different exposure across sections of the world compared to their benchmark indexes. This differential exposure for international funds is generated by a different belief than for domestic funds. For domestic funds one can make equilibrium arguments of why a strategy of differential exposure might be expected to produce excess returns. For international funds, these equilibrium arguments are more difficult and differential exposure must primarily be justified by specific forecasts of different returns in various sectors or by an attempt to lower risk.

The exposure to other indexes has real economic consequences for investors' risks. The average absolute value of the change in alpha due to taking exposure to other sources of return beyond the benchmark index averages 39 basis points. Since more funds use the S&P 500 index as a benchmark than any other benchmark, these funds were examined separately. The difference for these funds average 45 basis points per month. This is another indication that a lot of funds that use the S&P 500 index as a benchmark have substantial exposure to other factors. On the other hand, the average differential return from exposure to other indexes earned in all fund years was very close to zero. This indicates that while the exposure of funds to other indexes has a significant impact on the performance of individual funds, this exposure does not improve the performance of the average fund. These results are consistent with funds believing that they can beat the benchmark by taking bets on other indexes but *not*, in fact, making bets that have on average either a positive or negative payoff.

2. Changing Risk

As discussed earlier, the literature on incentive fees implies a differential risk posture depending on past performance. A manager who performs badly relative to the benchmark over the first part of a performance period has an incentive to take advantage of the greater convex shape of the payoff schedule in this range by increasing risk and thus having higher levels of expected return, while one who is performing well is near to concave portion of the payoff schedule and has an incentive to decrease risk in order to lock up the positive incentive fee. Chevalier and Ellison (1997) have shown that because fund flows are a function of performance we should also see this type of risk taking behavior for funds without incentive fees. The issue we need to examine is whether the added convexity of incentive fees causes more extreme behavior for funds with incentive fees.

To test this we examined the performance of incentive fee common stock funds that employed a 36-month evaluation period and contrasted this with the sample of non-incentive fee

funds described earlier in the paper.[21] We assumed that the manager would reexamine his or her position with respect to incentives at the end of 24 months and take a position with respect to risk over the next twelve months (the remaining year over which the incentive is computed).[22]

In each year from 1990 to 1999 we examined the previous 24 months of data for all funds with incentive fees. Based on the first 24 months, funds were ranked according to the size of the difference between their return and the benchmark return. The 20% of the funds that had outperformed the benchmark by the largest amount were placed in Group 1 while the 20% of the funds with the worst performance were placed in Group 2. For each of the groups the average of the variance around the benchmark index was computed for the next 12 months. In addition to examining this metric directly, we examined this metric divided by the variance around the index for the previous 24 months. The first statistic measures whether funds have a risk posture that conforms to theory while the second measures whether the fund changes risk in the direction specified by theory. We examine the same measures for the sample of funds that did not use incentive fees. Since these funds do not have a stated benchmark, we used as a benchmark the common stock index with which each fund was most highly correlated. The results are presented in Panel A and B of Table VI.

Clearly, incentive fee funds that have had a 24-month performance below the benchmark follow a strategy of having a higher variance around the benchmark in the next year than does the average fund employing incentive fees. Similarly, funds that had performance above the benchmark show a much lower variance from the benchmark than other funds. The difference in variance between these two groups was statistically significant at the 1% level. When we examine changes in risk posture with respect to the index rather than level, we also get very strong results. While the variance of the average funds were increasing over the period, funds that had good performance showed an increase in variance less than 1/7 the size of the increase for the average fund. Funds in the lower one-fifth of performance had an increase in variance around the benchmark almost one and one-half times that of the average fund. These differences

were only statistically significant at the 10% level. Examining Panel B of Table VI shows that for funds that did not employ incentive fees, risk in the subsequent 12-month evaluation period is actually higher for funds that had previously done well than it is for funds that have previously done poorly. In fact, the difference between the top and bottom 20% is close to zero and not statistically significant.[23] When we examine the percentage increase in variance we find that non-incentive fee funds changed risk in the same direction as incentive fee funds, but the differential increase, while statistically significant at the 10% level, is only slightly more than one-third of the size of the difference for incentive fee funds.

This analysis was repeated by dividing the 36-month period into two equal length periods. Although not reported in Table VI, the results were even stronger. For incentive fee funds the difference between the top and bottom quintiles was significant at the 1% level for variance and at the 5% level for the change in variance.[24] For non-incentive fee funds the difference between the quintiles is positive rather than negative for average variance. While it has the right sign for change in variance, it is very small compared to incentive fee funds and it is not significant even at the 10% level. From this analysis, we can see that while the effect of returns on cash flows leads to a pattern of risk taking as described by Chevalier and Ellison, the use of incentive fees magnified the extent of inter-temporal risk shifting in an economically significant way.

D. Attracting New Flows

One of the reasons a fund might wish to have incentive fees is that its management believes that funds with incentive fees attract more new cash inflows. Thus funds might impose incentive fees as a marketing strategy.

To examine the growth in new cash flow due to employing incentive fees, it was necessary to adjust for the impact of other influences that might affect new cash flow. For

example, funds that employed incentive fees could have grown faster than funds that did not, because their performance was better.

In order to incorporate the impact of other influences into the cash flow analysis we employed the model developed by Sirri and Tufano (1998). We follow Sirri and Tufano in defining the rate of growth due to new cash flows as the rate of growth in net asset value minus that part of growth that would arise from the reinvestment of all dividends and capital gains. Sirri and Tufano estimate the growth in net new flows as a function of past total net assets, expenses, standard deviation of return, past returns, and the growth rate of new money into funds with the same investment objective. We duplicated Sirri and Tufano's regression with exactly their definition of each variable and with the addition of a dummy variable to indicate whether the fund charged an incentive fee or not.[25] We ran the regression separately for years 1997, 1998 and 1999 and a combined regression for the three years with dummy variables for the years 1997 and 1998. The sample was all funds listed by ICDI as aggressive growth, growth and income and long-term growth, having $15 million in net assets, and included in the CRSP database. This is the same sampling procedure used by Sirri and Tufano. The results for the combined regression are shown in Table VII.

Note that the results are broadly consistent with those reported by Sirri and Tufano. In addition, the incentive fee dummy is positive and statistically significant at the 1% level. When the regression was performed for each year separately (results not shown), the incentive-fee dummy was positive in all three years and significant at the 5% level in two out of the three years. We also reran this analysis with a continuous rather than discreet measure for incentive fees. We used the dollar incentive fee earned by a fund over assets as a measure of the size of the incentive fee. Recall that the regression already contains variables to measure past performance so this measures the impact of the size of incentive fees earned with performance held constant. The measure of the size of the incentive fee earned has no discernable effect on cash inflows (T-valued 0.3) while the existence of incentive fees has a statistically significant

positive effect on cash flow. This is consistent with the existence of incentive fees being a signal to the market separate from performance or the magnitude of the fee earned.

This is strong evidence that the presence of incentive fees is attractive to investors. It provides one explanation of why funds might choose to voluntarily use incentive fees.

V. Conclusion

The use of incentive fees by mutual funds has not previously been studied. The fact that 10% of the assets under management by bond and stock funds are managed by funds with incentive fees attests to the importance of these funds in the mutual funds industry. In examining the impact of incentive fees on the mutual fund behavior, we can draw on the growing theoretical literature of the impact of incentive fees on managerial behavior to form hypotheses about their expected impact. This helps us to understand what aspects of mutual fund behavior to examine and allows us to perform one of the first empirical tests of incentive-fee theory.

What have we learned about mutual fund behavior for funds with incentive fees? Funds that employ incentive fees do not, on average, earn positive (or negative) incentive fees. However, internal managers seem to have more control over the design of the incentive system than do external managers, and so they earn slightly larger incentive fees.

Incentive fees are supposed to attract managers who are more skilled or will exert more effort than those who are attracted to funds without incentive fees. In fact, funds with incentive fees exhibit better stock selection ability than funds without incentive fees. Funds with incentive fees also have lower expense ratios than funds without incentive fees. Thus the fund holder benefits from two influences: better stock picking ability and lower expenses. Given the positive risk adjusted return, why don't incentive fee funds earn positive incentive fees? Funds with incentive fees have, on average, a beta less than one. When a benchmark has positive excess return, a beta less than one results in performance less than the benchmark. Thus, even though incentive fee funds have positive excess return, they do not, on average, outperform their

benchmark because of the underperformance relative to the benchmark caused by a beta less than one. This is one of the big puzzles of the actions of funds with incentive fees. The simplest strategy for outperforming an index with an expected positive return is to have a beta greater than one. We should note that while the beta on incentive fee funds is less than one, it is greater than the beta for funds which don't use incentive fees. The best way a manager without selection ability can hope to increase return after setting beta levels is by making bets on types of securities not included in the benchmark. Managers of funds with incentive fees make such bets because they believe they can benefit from them, but on average these bets have no impact on returns.

Moving from a discussion of return to risk, we find that incentive fee funds take more risk than non-incentive-fee funds on average, and that they increase risk after a period of poor performance and decrease it after a period of good performance.

What does all this mean for the investor? The sophisticated investor is better off buying funds with incentive fees than buying funds with no incentive fees. Risk-adjusted return is higher because of better management performance and lower expenses. However, the investor should realize that residual risk is higher with these funds. Incentive-fee funds do not track their own benchmark as closely as non-incentive-fee funds track the index they most closely follow. Furthermore, risk is likely to increase at the very time that returns are poor.

How does the market judge this combination of risk and return? It likes it, for cash flows into incentive funds are greater than cash flows into non-incentive funds.

In closing, a word of caution is in order. While at this time funds with incentive fees seem to offer superior performance to other actively managed funds, we don't know whether this is true because of the motivation supplied by incentive fees or because skilled managers adopt incentive fees to advertise their skills to the public.

TABLE I
AVERAGE INCENTIVE FEES EARNED AS A PERCENT OF TOTAL NET ASSETS

This table shows, for the years 1990 - 1999 and for various categories of funds using incentive fees, the average incentive fee earned expressed as a percentage of total net assets, as well the number of positive and negative incentive fees earned by the funds in each category. Internal/external advisor status was not available for some funds. All tests are on differences from zero, and all tests are 2-tailed tests except for the tests of differences in means between internal and external managers, where we hypothesize that internal managers will earn higher fees than will external managers.
* = significant at the 1% level; ** = significant at the 5% level; *** = significant at the 10% level.

Category	Obs	Avg. Inc. Fee As % Of TNA	# Pos.	# Neg.
All Funds	519	-0.006%	234	232
All Funds; Internal Advisor	366	0.000%	174	160
All Funds; External Advisor	98	-0.015% ***	43	47
Difference In Means (Internal - External)		0.015% ***		
Common Stock	400	-0.015% ***	168	186
Common Stock; Internal Advisor	289	-0.010%	132	130
Common Stock; External Advisor	64	-0.020%	25	33
Difference In Means (Internal - External)		0.010%		
International	86	0.031% *	51	32
International; Internal Advisor	62	0.038% *	36	25
International; External Advisor	16	0.000%	9	5
Difference In Means (Internal - External)		0.038% **		

TABLE II
MULTI-INDEX PERFORMANCE (ALPHA)

This table shows, for various categories of funds, the average performance (the average of multi-index-model alphas) for the incentive-fee sample as well as the differential alpha (incentive-fee-sample alpha minus matched non-incentive-fee sample alpha). Across all the non-incentive-fee funds, the average alpha was -0.036%, which was significant at the 1% level. Reported significance levels for differences in alpha are based on one-tailed tests; all other significance levels, including all of those for differences in means between internal and external advisors, are based on two-tail tests.
* = significant at the 1% level; ** = significant at the 5% level; *** = significant at the 10% level.

Category	Obs	Alpha For Incentive-Fee Funds	Difference In Alpha (Incentive-Fee Apha Minus Non-Incentive-Fee Alpha)
All Funds	531	0.048% **	0.084% *
All Funds; Internal Advisor	372	0.068% **	0.109% *
All Funds; External Advisor	103	0.027%	0.047% **
Difference In Means (Internal - External)		0.041%	0.062%
Common Stock	411	0.040% ***	0.080% *
Common Stock; Internal Advisor	295	0.055% ***	0.104% *
Common Stock; External Advisor	68	0.033%	0.047%
Difference In Means (Internal - External)		0.022%	0.057%
International	87	0.127% **	0.141% *
International; Internal Advisor	62	0.173% **	0.180% **
International; External Advisor	17	0.054%	0.076%
Difference In Means (Internal - External)		0.119%	0.104%

TABLE III
DIFFERENTIAL EXPENSES AND THEIR EFFECT ON ALPHA
AND DIFFERENTIAL ADJUSTED PERFORMANCE

This table shows differential expense ratios (incentive-fee-sample expense ratios minus matched non-incentive-fee sample expense ratios), adjusted alpha for the incentive-fee sample (incentive-fee-sample multi-index alpha plus differential expense ratio) and differential adjusted alpha for the incentive-fee sample (incentive-fee-sample expense-adjusted alpha minus the average matched non-incentive-fee sample alpha). Reported significance levels for differential adjusted alphas are based on one-tailed tests; all other reported significance levels, including all of those for differences in means between internal and external advisors, are based on two-tail tests.
* = significant at the 1% level; ** = significant at the 5% level; *** = significant at the 10% level.

Category	Obs	Differential Expenses	Adjusted Alpha	Differential Adjusted Alpha
All Funds	531	-0.036% *	0.012%	0.048% **
All Funds; Internal Advisor	372	-0.034% *	0.034%	0.075% *
All Funds; External Advisor	103	-0.054% *	-0.027%	-0.006%
Difference In Means (Internal - External)		0.020% *	0.061%	0.081% **
Common Stock	411	-0.037% *	0.004%	0.044% **
Common Stock; Internal Advisor	295	-0.037% *	0.019%	0.067% **
Common Stock; External Advisor	68	-0.054% *	-0.021%	-0.007%
Difference In Means (Internal - External)		0.017% *	0.040%	0.074%
International	87	-0.037% *	0.090%	0.104% **
International; Internal Advisor	62	-0.026% *	0.147% ***	0.154% **
International; External Advisor	17	-0.090% *	-0.035%	-0.014%
Difference In Means (Internal - External)		0.064% *	0.182% ***	0.168%

TABLE IV
DIFFERENTIAL RETURNS AND THEIR DETERMINANTS

For various categories of funds, this table shows averages of differential returns (fund return minus benchmark return) and betas from a regression of fund excess return on benchmark excess return, multi-index alphas, and the effect on differential returns of fund betas not being equal to 1 or of additional influences beyond a single-index model.

					Change In Return Due To	
Category	Obs	Differential Return	Multi-Index Alpha	Average Beta	Beta Not Equal To 1	Additional Influences
All Funds	531	0.001%	0.048%	0.952	-0.046%	-0.001%
All Funds; Internal Advisor	372	0.048%	0.068%	0.961	-0.032%	0.012%
All Funds; External Advisor	103	-0.087%	0.027%	0.944	-0.060%	-0.054%
Common Stock	411	-0.028%	0.040%	0.964	-0.058%	-0.010%
Common Stock; Internal Advisor	295	0.018%	0.055%	0.971	-0.045%	0.008%
Common Stock; External Advisor	68	-0.106%	0.033%	0.952	-0.078%	-0.060%
International	87	0.182%	0.127%	0.866	-0.003%	0.057%
International; Internal Advisor	62	0.225%	0.173%	0.891	0.017%	0.034%
International; External Advisor	17	0.031%	0.054%	0.851	-0.024%	0.001%

TABLE V
AVERAGE R^2s, BETAS AND VARIANCES OF TRACKING ERROR

This table shows, for various categories of incentive-fee funds, the average R^2 and beta from a regression of fund excess return on benchmark excess return, along with the average of the tracking error (the variance of the fund return minus the benchmark return). Differential measures are also shown, where each differential is the difference between the incentive-fee-sample measure and the matched non-incentive-fee sample measure. For the non-incentive-fee sample, the averages (based on a regression using an index determined by style analysis) are as follows: All Funds: obs = 2113, R^2 = 0.855, beta = 0.916, tracking error variance = 3.423; Common Stock: obs = 1638, R^2 = 0.860, beta = 0.919, tracking error variance = 3.304; International: obs = 343, R^2 = 0.814, beta = 0.889, tracking error variance = 5.047. Reported significance levels for differential (incentive-fee sample minus matched non-incentive-fee sample) averages and differences in means are based on one-tailed tests. * = significant at the 1% level; ** = significant at the 5% level; *** = significant at the 10% level.

		R^2		Beta		Tracking Error Variance	
Category	Obs	Fee Sample	Differential	Fee Sample	Differential	Fee Sample	Differential
All Funds	531	0.795	-0.060 *	0.952	0.037 *	4.680	1.256 *
All Funds; Internal Advisor	372	0.796	-0.055 *	0.961	0.044 *	4.566	1.060 *
All Funds; External Advisor	103	0.854	-0.015	0.944	0.034 *	3.192	0.216
Difference In Means (Internal - External)		-0.058 *		0.017		1.374 **	
Common Stock	411	0.781	-0.079 *	0.964	0.046 *	4.917	1.616 *
Common Stock; Internal Advisor	295	0.784	-0.074 *	0.971	0.049 *	4.679	1.383 *
Common Stock; External Advisor	68	0.825	-0.043 **	0.952	0.051 *	3.968	0.802
Difference In Means (Internal - External)		-0.041 **		0.019		0.711	
International	87	0.817	0.003	0.866	-0.023	5.149	0.104
International; Internal Advisor	62	0.839	0.026 **	0.891	0.001	4.945	-0.142
International; External Advisor	17	0.865	0.049 *	0.851	-0.037 ***	3.208	-1.794 *
Difference In Means (Internal - External)		-0.026 ***		0.040		1.737 **	

TABLE VI

RISK POSTURE AS A FRACTION OF PREVIOUS PERFORMANCE

For common stock incentive-fee funds with 36-month rolling fees, this table shows the monthly average fund return minus the monthly average benchmark return during a prior two-year period ("period 1"), the average variance of that difference for the following one-year period ("period 2") and the average percentage increase in the variance of that difference for period 2. The funds are ranked by their period-1 two-year monthly average return differences. Reported significance levels based on one-tailed tests. * = significant at the 1% level; ** = significant at the 5% level; *** = significant at the 10% level.

	NUMBER OF FUND PERIODS	AVERAGE FUND TWO-YEAR RETURN MINUS BENCHMARK RETURN	AVERAGE VARIANCE IN NEXT 12 MONTHS	PERCENTAGE INCREASE IN VARIANCE
TOP 20%	55	0.488%	3.786	24.22%
ALL	277	-0.053%	4.318	43.35%
BOTTOM 20%	55	-0.669%	6.327	58.06%
TOP 20% - BOTTOM 20%		1.157% *	-2.541 *	-33.84% ***

TABLE VII
NEW FLOWS AND INCENTIVE FEES:
CROSS-SECTIONAL REGRESSION OF NET CASH FLOW ON NET ASSETS, CATEGORY FLOWS, RISK, EXPENSES, PERFORMANCE AND INCENTIVE FEE DUMMY

This table shows cross-sectional regression results using the Sirri and Tufano (*Journal of Finance*, October 1998) regression model with the addition of dummy variables for incentive-fee funds (Fee Dummy) and years (1997 Dummy and 1998 Dummy) across 3,371 fund observations and 3 years (1997, 1998 and 1999). The sample consists of all "aggressive growth" "long-term growth" and "growth and income" funds, as classified by ICDI in the CRSP Mutual Fund Database, with data spanning 1996-1999.
The dependent variable is the year t growth rate of net new money for fund i, defined as $(TNA_{i,t} - TNA_{i,t-1} * (1 + R_{i,t})) / TNA_{i,t-1}$, where $TNA_{i,t}$ is fund i's total net assets at the end of year t and $R_{i,t}$ is the raw return of fund i in year t. In addition to the dummy variables, the independent variables include the log of fund i's total net assets at the end of the prior year (Log Lag TNA), the growth rate in year t of net new money for all sample funds in the same investment category as fund i (Flow To Category), the volatility of the prior year's monthly returns of fund i (Lagged Risk), the level of total fees (expense ratio plus load) charged by the fund in year t - 1 for an investor with a seven-year holding period (Lagged Fee), and measures of the fractional performance rank of fund i in the prior year. A fund's fractional rank ($RANK_t$) is its percentile performance based on its year t raw return relative to other funds in that year and in that fund's category, and ranges from 0 to 1. The funds are then divided into quintiles based on their prior-year rankings. For example, the 5th or lowest performance quintile (Lowperf) is defined as Min[0.2, $RANK_{t-1}$], the 4th performance quintile (4thperf) is defined as Min[0.2, $RANK_{t-1}$ - Lowperf], etc., up to the highest performance quintile (Highperf).

NUMBER OF OBSERVATIONS: 3731
NUMBER OF INCENTIVE-FEE FUND OBSERVATIONS: 210
ADJUSTED R^2: 0.179

	Coefficient	t Stat
Intercept	0.035	0.347
Log Lag TNA	-0.060	-7.718
Flow To Category	1.047	3.481
Lagged Risk	-1.469	-1.785
Lagged Fee	2.956	1.442
Lowperf	0.647	1.908
4thperf	0.495	1.822
3rdperf	0.568	2.127
2ndperf	0.828	3.047
Highperf	3.420	10.145
Fee Dummy	0.101	2.015
1997 Dummy	-0.092	-0.974
1998 Dummy	-0.048	-1.124

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[1] For an opposing view see Admati & Pfleiderer (1997).

[2] The importance and size of these biases have been analyzed for one type of private partnership, publicly offered commodity bonds. See Elton, Gruber and Rentzler (1989).

[3] There are rare occurrences of funds that do not have symmetrical fees, e.g., the Accessor Funds. Conversations with the SEC indicate that while they are aware of this, they have not as yet taken any action.

[4] A high watermark means that incentive fees are not paid until any negative performance incurred in the past is made up.

[5] There were no incentive fee money market funds, so comparisons are with non-money-market funds. When a fund has multiple classes shares, we use the longest existing class in all subsequent analyses.

[6] In a recent article, Christofferson (2001) examines the use of fee waivers by money market funds as a way for management to link fees to performance. The impact of implicit incentive fees versus the use of fee waivers to link fees and performance is an interesting topic for future research.

[7] There is one influence, although minor in size, that could cause a fund manager to have a beta below one. Recognizing that most funds pay compensation on a rolling 12- or 36-month return, beating a benchmark is equivalent to stating that the geometric mean over the 12 or 36 months is higher for the fund than for the index. The geometric mean depends on the arithmetic mean and arithmetic variance. The higher the arithmetic mean and the lower the variance, the higher the geometric mean. Thus a manager with an incentive fee could increase the probability of having a higher geometric mean by having a lower arithmetic variance than the benchmark. This would suggest a beta less than one.

[8] Ross (2000) argues that utility functions exist for which above some risk level the manager is better off with less variance and the commensurate lower expected fees. Carpenter (2000) makes a similar argument.

[9] In our sample there were 22 changes of managers in the 28 funds with external managers, and 22 changes out of 80 internally managed.

[10] We examined the holdings and strategies of these funds, and some we initially selected were discarded and replaced by new randomly selected funds. We replaced funds if they had an investment strategy very different from the funds in our sample. This involved either extensive use of options, hedge funds, funds engaged in major market timing, or holding assets such as real estate not present in our sample. Finally, we discarded without replacement a few funds which invested in a single country or single industry because none of the incentive fee funds followed such a strategy.

[11] In examining all tables, the reader should note that the number of fund months identified as internal and external add to a smaller number than the total fund months examined. In the early years of our sample, some funds could not be identified as having internal or external managers.

[12] For example, we grouped funds into the one-third that would earn the highest incentive component of the fee if performance exceeded the benchmark by 1% and the one-third with the lowest. We repeated this for 2%, 3% and 4%, and also for all ranges we divided the funds into top and bottom halves.

[13] Elton, Gruber, Das & Hlavka (1993) have shown that over one 20-year period the smallest decile of stocks would have a risk-adjusted excess return relative to the S&P benchmark of 12.81% per year.

[14] See Elton, Gruber and Blake (1999) for evidence and a detailed description of the indexes.

[15] For a detailed description see Blake, Elton and Gruber (1993).

[16] The results overstate the alphas on the non-incentive funds, for they include some small funds from the CRSP data set that are subject to omission bias (see Elton, Gruber and Blake (2001)).

[17] They would do much better than a set of index funds with the same risk because index funds have expenses that lower their performance below the indexes they follow. In addition, as shown in equation (1), variable fees effect the after fee beta and, consequently, the alpha. How big is this effect? Since most betas were less than one, the effect of variable fees is to reduce beta (see equation (7)). However, since the average beta was close to one, the net effect was miniscule.

[18] This is despite the fact that, as shown in the next section, incentive-fee funds take large bets on other indexes.

[19] Some non-incentive-fee funds also declare a benchmark they are trying to beat. Investors in these funds also have a risk that the fund does not follow its stated policy. The difference is twofold. First, all incentive-fee funds have a declared benchmark, and only some non-incentive-fee funds do. Second, incentive fee funds not only declare a benchmark, but are compensated depending on their performance relative to it. Thus investors should logically have a stronger belief about the fund's objective for incentive-fee funds and be hurt much more if the fund deviates from it.

[20] All regressions are computed over a three-year period. The candidates for inclusion in style analysis were those used in determining the multi-index alphas.

[21] We selected funds with a 36-month evaluation period so that we could have a sufficient period to estimate variances. We examine a different phenomenon than that of the tournament literature of Brown, Harlow & Starks (1996)**,** because that literature hypothesizes an increase in risk within a year in order for a fund to look good in yearly evaluation services, and we are discussing risk changes across years.

[22] We could have selected other periods, but since managers typically do an analysis of their portfolio at year-end (after window dressing), this seemed like a good decision point to examine. The analysis might seem naïve in that we have not considered the impact of the decision made for the final twelve months on the following incentive computation that would include these twelve months. However, it is easy to show that, if management had no special information, increasing or decreasing risk does not impact the expected value of future compensation.

[23] This is not necessarily inconsistent with Chevalier and Ellison. Chevalier and Ellison have shown increased risk taking in the last quarter of a year caused by funds attempting to adjust their performance for that year. Our paper deals with risk taking from one year to the next.

[24] The results for average variance for top 20%, all, and bottom 20% of incentive fee funds are 3.713, 4.163 and 6.054, and for percentage increase are 24.73%, 57.14% and 99.14% respectively. These are more statistically significant than the 24-month/12-month split results. For non-incentive fee funds the average variance for the top 20%, all, and bottom 20% are 4.88, 3.63, and 4.55 and for percentage increases are 41.52%, 67.00%, and 52.60%.

[25] See Sirri and Tufano for exact definitions of each variable. A fund is included in our incentive-fee sample and has a dummy of one if, at the beginning of the year for which we compute cash flows, it had an incentive fee.